REMARKS/ARGUMENTS

Claims 1-21 were previously pending in the application. Claims 9, 12, 14-17, and 21 are canceled; claims 1-3, 6-8, 11, 13, and 18-19 are amended; and new claims 22-28 are added herein. Assuming the entry of this amendment, claims 1-8, 10-11, 13, 18-20, and 22-28 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

Support for new claims 22-28 is as follows:

New Claim	Support
22	Claim 3
23	Claim 6
24	Claims 8 and 9
25	Claims 1, 3, and 6
26	Claim 3
27	Claims 1, 3, 8, and 9
28	Claim 3

In paragraph 2 of the office action, the Examiner rejected claims 1-5, 8, 10-18, and 20-21 under 35 U.S.C. 102(e) as being anticipated by Best. In paragraph 3, the Examiner objected to claims 6-7, 9, and 19 as being dependent upon a rejected base claim, but indicated that those claims would be allowable if rewritten in independent form. For the following reasons, the Applicant submits that all of the now-pending claims are allowable over Best.

Claim 1

Support for the amendments to claim 1 is found in original claims 14-17.

Currently amended claim 1 is directed to a programmable device having programmable input/output (I/O) circuitry and programmable logic connected to receive incoming signals from and provide outgoing signals to the I/O circuitry. The I/O circuitry can be programmed to function in (1) an independent mode of operation in which first and second pads of the programmable device operate independent of one another and (2) two or more dependent modes of operation in which a pair of related signals appear at the first and second pads, respectively. The two or more dependent modes of operation have different combinations of high, low, common mode, and differential voltage levels. Best does not teach or even suggest such a combination of features.

In rejecting original claims 14-17, the Examiner stated that Best "inherently teaches ... one or more dependent modes of operation include differential and complementary of operation," citing column 4, lines 3-10. The passage cited by the Examiner refers to the apparatus of Fig. 2. According to column 5, lines 1-3, the two ports (i.e., wires 208 and 209) of that apparatus "may be used for unidirectional or bi-directional signaling in either a single-ended mode or a differential mode" (emphasis added). In the single-ended mode, two different signals conveying different information are communicated over wires 208 and 209, while, in the differential mode, the same information is conveyed at a given time over both wires 208 and 209.

The single-ended mode of Best may be said to be analogous to a single independent mode of claim 1, while Best's differential mode may be said to be analogous to a single dependent mode of claim 1. Significantly, however, Best does not teach or even suggest an apparatus that can be programmed to

function in two or more different dependent modes. For example, Best does not teach an apparatus that can be programmed to function in two different differential modes. Rather, the apparatus taught by Best can be programmed to function in only one differential mode.

As such, the Applicant submits that currently amended claim 1 is allowable over Best.

Claim 3

According to claim 3, for the first and second pads, the I/O circuitry comprises five programmable impedances. In rejecting claim 3, the Examiner cited resistors 302, 304, 306, and 308 in Best's Fig. 3 as being examples of four of the programmable impedances of claim 3, while the fifth programmable impedance of claim 3 is "intrinsic inside 205." The Applicant submits that, while Best's resistors 302, 304, 306, and 308 are impedances, they are not "programmable" impedances.

As used in the specification, a "programmable impedance" is a device that can be controlled to provide different impedance levels. See, e.g., page 5, lines 19-28. Figs. 3-5 and Table I show three different differential signaling schemes that can be supported by programming the I/O circuitry of Fig. 2, and Table II identifies the different impedance levels at which the various programmable impedances in Fig. 2 can be programmed to achieve those different signaling schemes.

Each resistor taught in Best, on the other hand, is a conventional resistor that provides a single, fixed level of impedance. There is simply no teaching or even suggestion in Best for implementing the disclosed termination scheme using programmable resistors that can be controlled to provide different levels of impedance. As such, Best's resistors are not "programmable impedances" as that term is used in the present application. The Applicant submits therefore that this provides additional reasons for the allowability of claim 3 over Best.

Claim 13

According to claim 13, the dependent modes of operation include both symmetric and non-symmetric modes of operation. According to the specification, symmetric signaling refers to signaling in which the midpoint between the high and low voltage levels Voh and Vol (e.g., the common-mode voltage Vcm) is the same as the midpoint between the high and low power-supply voltages Vdd and Vss, while non-symmetric signaling refers to signaling in which Vcm is not midway between Vdd and Vss (or, in another possible type of non-symmetry, not midway between Vdd and Vss). See page 1, line 32, to page 2, line 2. Best does not even mention symmetric or non-symmetric signaling, let alone a termination scheme that supports both symmetric and non-symmetric modes of operation. The Applicant submits therefore that this provides additional reasons for the allowability of claim 13 over Best.

Claim 18

According to claim 18, the dependent modes of operation include both symmetric and non-symmetric modes of operation. As such, the above arguments regarding claim 13 apply equally well to claim 18.

Claim 19

According to claim 19, for the first and second pads, the I/O circuitry comprises five programmable resistors, and the dependent modes of operation include both symmetric and non-

symmetric modes of operation. As such, the above arguments regarding claims 3 and 13 apply equally well to claim 18.

Claim 20

Original claim 20 is directed to a programmable termination circuit integrated within a programmable device and adapted to provide programmable, resistive interconnections between input/output (I/O) pads of the programmable device. The termination circuit comprises a plurality of programmable resistors, a plurality of programmable switches connecting the programmable resistors, and a plurality of voltage terminals connected to at least some of the programmable resistors and adapted to receive one or more a programmable reference voltages. For reasons similar to those provided earlier regarding claim 3, the Applicant submits that claim 20 is allowable.

Claim 22

According to claim 22, for the first and second pads, the I/O circuitry comprises five programmable impedances. As such, the above arguments regarding claim 3 apply equally well to claim 22.

Claim 23

According to claim 23, a third pad of the programmable device is switchably connected to a node along the switchable connection between the first and second pads. The Applicant submits that Best does not teach or even suggest such a feature in combination with the other recited features. As such, the Applicant submits that this provides additional reasons for the allowability of claim 23 over Best.

Claim 24

According to claim 24, the first programmable impedance and the second programmable impedance can be programmably operated as a first push-pull buffer, the third programmable impedance and the fourth programmable impedance can be programmably operated as a second push-pull buffer, the first push-pull buffer is implemented as a combination of two or more smaller programmable push-pull buffers, and the second push-pull buffer is implemented as a combination of two or more smaller programmable push-pull buffers. Applicant submits that Best does not teach or even suggest such a feature in combination with the other recited features. As such, the Applicant submits that this provides additional reasons for the allowability of claim 24 over Best.

Claim 25

According to claim 25, a third pad is switchably connected to a node along the switchable connection between the first and second pads. The Applicant submits that Best does not teach or even suggest such a feature in combination with the other recited features. As such, the Applicant submits that claim 25 is allowable over Best.

Claim 26

According to claim 26, each impedance is a programmable impedance. As such, arguments similar to the above arguments regarding claim 3 apply equally well to claim 26.

Claim 27

According to claim 27, the first impedance and the second impedance can be operated as a first push-pull buffer, the third impedance and the fourth impedance can be operated as a second push-pull buffer, the first push-pull buffer is implemented as a combination of two or more smaller push-pull buffers, and the second push-pull buffer is implemented as a combination of two or more smaller push-pull buffers. The Applicant submits that Best does not teach or even suggest such a feature in combination with the other recited features. As such, the Applicant submits that claim 27 is allowable over Best.

Claim 28

According to claim 28, each impedance is a programmable impedance. As such, arguments similar to the above arguments regarding claim 3 apply equally well to claim 28.

In view of the above amendments and remarks, the Applicant believes that the now-pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

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